

Materials

USSR

UDC 662.997.621.316.344.4

TOROPTSEVA, T. N., ~~RAYBAKOVA, M. N.~~, GREBELYUK, I. I., BLAGOVESHCHENSKAYA, I. F., All-Union Order of the Red Banner Scientific Research Institute of Current Sources

"An Investigation of the Behavior of Silicone Polymer Materials Under the Operating Conditions of Solar Power Installations"

Tashkent, Geliotekhnika, No 6, 1970, pp 38-39

Abstract: A report is given on an analysis and operational testing of three new types of bonding material - silylmethylene, polysiloxysilazane, and silazane, with regard to their use in solar power installations. It is found that L-24-7 polysiloxysilazane varnish and L-24-7 silazane varnish have favorable long-time aging properties against light and weather, stability to abrupt temperature changes, which, in conjunction with good properties of adhesion to concentrators and semiconductors, mechanical strength and resistance to solvents, qualify them for use as protective coatings for the working surfaces of photocells and concentrators.

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USSR

BAYBAKOVA, O. V., and MOLODYKH, L. V., All Union Institute of Plant Breeding  
imeni N. I. Vavilov

"Susceptibility to Powdery Mildew of Varieties of Peas"

Moscow, Selektsiya i Semenovodstvo, Vol 36, No 6, Nov/Dec 71, pp 75-76

Abstract: Powdery mildew caused by *Erysiphe communis* is the most common disease of peas in Leningradskaya Oblast'. Dry and hot weather favors the development of the disease. Forty varieties of peas were subjected to tests to determine the susceptibility to powdery mildew. Methods recommended by the All Union Institute of Plant Protection were applied in estimating the degree of infection. Slow-ripening varieties were more susceptible to infection than rapidly ripening varieties or those with a medium rate of ripening, because their ripening coincided with the time of mass development of the disease. Of the forty varieties tested, three showed a low susceptibility to powdery mildew, 10 a medium susceptibility, and 27 a high susceptibility. The varieties with a low susceptibility (degree of infection of the plants on the basis of the plant area affected, 20-25%) were Afganistanskiy, Perchak, and Shirobana kinusaja, and those with a medium susceptibility (degree of infection 25-50%) Chicara, Pobeditel', Signal, Superperfection, Da Beira, Olho preto, Acclimatized Round-Seeded, Ambrosiana, Nano Taccola, and Ehgl. Sabel.

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BAYBARA, V. S.

JPRS 55341  
6 MAR 73

UDC: 611.233:611.11.014.47-064-019

MORPHOLOGICAL CHANGES IN BRONCHIAL VESSELS ASSOCIATED WITH EXPERIMENTAL  
HYPODYNAMIA AND HYPOKINESIA

Article by V. S. Baybara, Chair of Normal Anatomy (headed by Professor M. G. Privas, Honored Scientist), First Leningrad "Order of Red Banner of Labor" Medical Institute named Academician I. P. Pavlov; Leningrad, Arkhiv Anatomii, Embriologii i Evoliutsii, Russian, No 11, 1971, submitted 2 July 1971, pp 93-99

The effect of hypodynamia and hypokinesia on the structure of intrabronchial vessels has not been investigated; we failed to encounter works dealing specially with this subject in the literature.

The objective of the present work was to investigate the morphological changes in bronchial vessels as related to experimental hypodynamia and hypokinesia.

The bronchi of rabbits kept in small individual boxes served as our material. Hypokinesia was created by a method developed on the chair of normal anatomy of the First Leningrad Medical Institute. For this purpose the experimental rabbits were put in these boxes for 2-14 weeks. In all 30 rabbits were used: 5 intact controls, 6 that were sacrificed after 2 weeks, 8 after 4 weeks, 6 after 8 weeks, and 5 rabbits were sacrificed after 12-14 weeks. Control and experimental rabbits received identical food without limitation. Following decapitation, the bronchi were fixed in 12% neutral formalin for 3-7 days.

For demonstration of the bronchial vascular bed, 30-60 micron preparations were made using the noninjection method as modified by the present author (1971). The capabilities of this technique made it possible to omit other methods of staining the sections. All experimental animals presented a change in all components of the bronchial vascular network, and the changes were in the same direction in each series.

USSR

UDC 620.193.4:669.29

BRYNZA, A. P., GERASYUTINA, L. I., BAYBAROVA, YE. YA., Dnepropetrovsk State University

• "Corrosion Behavior of Titanium in Dimethylformamide"

Moscow, Zashchita Metallov, Vol 8, No 6, 1972, pp 705-707

Abstract: A theoretical and experimental study was made of the corrosion and electrochemical behavior of titanium in solutions of dimethylformamide. The corrosion tests were performed by the gravimetric method [A. P. Brynza, et al., Zh. prikl. khimii, No 35, 683, 1962], and the electrochemical tests were made by the method of taking the polarization curves under potentiodynamic conditions [L. I. Gerasyutina, et al., Zh. prikl. khimii, No 36, 2005, 1963] with a mean rate of variation of the potential of three volts/hour in the temperature range of 40, 60, 70, and 80°. The gravimetric tests lasted 3 hours.

For all the investigated temperatures, titanium did not dissolve noticeably in dimethylformamide. Solutions of  $H_2SO_4$  in dimethylformamide were aggressive. The corrosion rate  $V$  as a function of the temperature in a 4 normal solution of  $H_2SO_4$  in dimethylformamide is subject to the Arrhenius equation, and in the  $\lg V$  --  $1/T$  coordinates it has a rectilinear nature. The effective  $1/2$

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BRYNZA, A. P., et al, Zashchita Metallov, Vol 8, No 6, 1972, pp 705-707

activation energy for the titanium corrosion process found from the experimental curve is 18.2 kcal/mole which indicates the electrochemical control of the process. Paranitroaniline (to 40 grams/liter), katapine A (to 10 grams/liter), and utropine (to 2 grams/liter) were tested as titanium corrosion inhibitors in 4 normal  $H_2SO_4$  in dimethylformamide, but only urotropine was effective. Addition of 0.5% water to the electrolyte has little effect on the process of active solution of titanium, but addition of 1% water changes the nature of the polarization curve. The data indicate that the solution of the titanium in the active state takes place with the participation of water molecules. Passivation of the titanium in acid solutions is the result of interaction of the metal with the water molecules. The urotropine increases the cathode and anode polarization of the titanium, that is, it is a mixed inhibitor with predominant effect on the anode process.

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1/2 016 UNCLASSIFIED PROCESSING DATE--13NOV70  
TITLE--LOW TEMPERATURE METHOD FOR DEASHING PETROLEUM COKE --U-  
AUTHOR--(04)--ABYZGILDIN, YU.M., SYUNYAYEV, Z.I., BAYBAZAROV, A.A., GIMAYEV,  
R.N.  
COUNTRY OF INFO--USSR  
SOURCE--KHIM. TEKHNOL. TOPL. MASEL 1970, 15(4), 27-9  
DATE PUBLISHED-----70  
SUBJECT AREAS--EARTH SCIENCES AND OCEANOGRAPHY  
TOPIC TAGS--COKE, NITRIC ACID, LOW TEMPERATURE EFFECT  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRA--3001/0058  
CIRC ACCESSION NO--AP0125893  
STEP NO--UR/0065/70/015/004/0027/0029  
UNCLASSIFIED

2/2 016

UNCLASSIFIED

PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AP0125893

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. COKE WAS CRUSHED, TREATED WITH 63.5PERCENT HNO SUB3 AT SIMILAR TO 100DEGREES, WASHED WITH WATER AND DRIED TO SIMILAR TO 120DEGREES. THE ASH IN THE COKE TREATED 1 AND 6 HR WAS REDUCED FROM 0.84 TO 0.031 AND 0.005PERCENT, RESP. HNO SUB3 WAS RECOVERED.

FACILITY: UFM. NEFT. INST., UFA, USSR.

UNCLASSIFIED

USSR

UDC 669.295.054.79

GALITSKIY, N. V., BAYBEKOV, M. K., DROZHZHEV, V. I., CHEPRASOV, I. M.,  
MEDVEDCHIKOV, E. P., BARKOVA, N. P., ZAVADOVSKAYA, V. N., SELEDTSOV, D. K.,  
and KORENDYASEV, M. I.

"Reprocessing Waste Titanium and Its Alloys in a Chloride Melt"

Moscow, Metallurgiya i Khimiya Titana (Institut Titana), Metallurgiya  
Publishing House, Vol 6, 1970, pp 135-140

Translation: Results are given of experimental-industrial research on the reprocessing of ungraded waste mixtures of chips from different titanium alloys by chlorinating in a chloride melt. An experimental batch of marketable titanium sponge was obtained. The characteristics of the raw material used, the chlorine gas, the coke, and the working fusion are given, along with a description of the technological conditions, the chart for preparing chips for chlorination, and the technological equipment charts for the chlorination and cleaning conversions. An analysis is made of the distribution of alloying elements in the products of chlorination. Basic expenditure coefficients, calculated per ton of industrial titanium tetrachloride, are deduced, and data are given on the quality of the  $TiCl_4$  and the sponge titanium obtained. Three illustrations and one table.

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1/2 012 UNCLASSIFIED PROCESSING DATE--04DEC70  
TITLE--EXTRACTION OF SCANDIUM FROM CHLORIDE SOLUTIONS USING TRIBUTYL  
PHOSPHATE -U-  
AUTHOR--(05)-FAVORSKAYA, L.V., PRESNETSOVA, V.A., PUTILIN, YU.M., BAYBEKOV,  
M.K., VOROBYEV, L.I.  
COUNTRY OF INFO--USSR  
SOURCE--ZH. PRIKL. KHIM. (LENINGRAD) 1970, 43(5), 1158-60  
DATE PUBLISHED-----70  
SUBJECT AREAS--CHEMISTRY, MATERIALS  
TOPIC TAGS--SOLVENT EXTRACTION, SCANDIUM, ORGANIC SOLVENT, PHOSPHATE ESTER  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRA--3004/0940 STEP NO--UR/0080/70/043/005/1158/1160  
CIRC ACCESSION NO--AP0131525  
UNCLASSIFIED

2/2 012

UNCLASSIFIED

PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AP0131525

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE EXTN. OF SC FROM HCL SOLNS. WAS STUDIED IN THE PRESENCE OF FE(II), FE(III), AND OTHER IONS GENERALLY PRESENT WITH SC IN ITS ORES. THE COMPN. OF THE ARTIFICIALLY PREPD. SAMPLE WAS MGCL SUB2 30, FECL SUB2 9, TICL SUB4 2, FECL SUB3 2, KCL PLUS NACL 21, CACL SUB2 3, SC SUB2 0 SUB3 0.02, ALCL SUB3 3PERCENT. THE EXTN. WAS WITH 70PERCENT BU SUB3 PD SUB4 SOLN. IN KEROSENE. THE RATIO OF THE ORG. AND AQ. PHASES WAS 1:3. THE MIXT. WAS STIRRED MECH. FOR 5 MIN. THE SC WAS REEXTD. WITH 3:1 ORG. TO WATER PHASE RATIO 1ST WITH 2N HCL AND THEN WITH H SUB2 0. HYDROXIDE WAS PPTD. BY NH SUB3 FROM THE 1ST REEXT. SC CAN BE EFFECTIVELY EXT. FROM THE ABOVE ARTIFICIALLY PREPD. MIXT. IN A TYPICAL EXPT. THE 1ST REEXTD. PORTION CONTD. 5.3-6PERCENT SC SUB2 0 SUB3 AND THE 2ND, 20-30PERCENT SC SUB2 0 SUB3. FACILITY: KAZ. NAUCH.-ISSLED. INST. MINER. SYR'YA, ALMA-ATA, USSR.

UNCLASSIFIED

USSR

UDC 669.295.48

GALITSKIY, N. V., BAYBEKOV, M. K., DROZHZHEV, V. I., CHEPRASOV, I. M., MEDVEDCHIKOV, E. P., BARKOVA, N. N., ZAVADOVSKAYA, V. N., SELEDTSOV, D. K., and KORENDYASEV, M. I.

"Processing of Wastes of Titanium and Its Alloys in Chloride Salt Melt"

Sb. tr. Vses. n.-i. i proyekt. in-t titana [Collected works of All-Union Scientific-Research and Planning Institute for Titanium], 6, 1970, 135-140, (Translated from Referativnyy Zhurnal-Metallurgiya, No. 1, 1971, Abstract No. 16199 by the Authors).

Translation: Results are presented from pilot-scale studies of the processing of unconditioned wastes with a mixture of chips of various Ti alloys by chlorination in a chloride salt melt. An experimental batch of commercial Ti sponge is produced. Characteristics are presented for the raw material, chlorine gas, coke, and working melt used; the technological modes and plans of preparation of the chips and chlorination are presented, along with a technological diagram illustrating the limits of chlorination and purification. Distribution of alloying metals in the chlorination of products is analyzed, the basic consumption factors per ton of technical  $TiCl_4$  are presented, and data are presented on the quality of the  $TiCl$  and sponge Ti produced. 3 figures; 1 table.

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UDC 536.244:532.517.4.001.5

KALININ, E. K., DREYTSER, G. A., BAYBIKOV, B. S., NEVEROV, A. S.

"Effect of a Nonstationary Heat Flow on Heat Emission in a Pipe Under Gas Heating"

V sb. Teplo- i massoperenos (Heat and Mass Transfer -- Collection of Works), Vol. 1, Minsk, 1972, pp 363-367 (from RZh-Teploenergetika, No 7, Jul 72, Abstract No 7G83)

Translation: An experimental study of the local nonstationary coefficient of heat emission is described. The study was made for different laws of the change in heat emission in two thin-walled tubes of thickness 0.3 and 0.22 mm and internal diameters of 5.93 and 5.56 mm, respectively, and length 1200 mm and for a turbulent gas flow with constant discharge  $G$ . The experiments were in the following ranges:  $Re_b = 10^4 - 6.4 \cdot 10^5$ , temperature factor  $(T_w/T_b) = 1.12-1.16$  and gas pressure 2-2.6 kgauss/cm<sup>2</sup>. The change in  $K = Nu/Nu_0$ , ( $Nu$  and  $Nu_0$  are the nonstationary and quasistationary Nusselt numbers) and in the wall temperature  $T_w$  with time was independent of pressure and is determined

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KALININ, E. K., et al, Teplo- i massoperenos, Vol. 1, Minsk, 1972, pp 363-367

by  $G$  and the heat release in the walls of the tube. In nonstationary conditions the coefficient of heat release is considerably different from the quasistationary value and depends on the quantity  $K_{Tg} = \partial T_w / \partial \tau \cdot d / (T_w - T_b)_0 \times \sqrt{\lambda / \psi_p Cg}$ , where  $\tau$  is time,  $(T_w - T_b)_0$  is the temperature head in a given section of the tube, the form of the final temperature head for the input and the latter the initial temperature head for the output of the thermal load;  $\lambda$  and  $\psi_p$  are the coefficient of thermal conductivity and the thermal capacity of the gas,  $g = 9.8 \text{ m/c}^2$ . This criterion characterizes the ratio of the nonstationary transfer of thermal flow from the wall to the convective axial thermal flow. The effect of  $K_{Tg}$  on nonstationary heat transfer is reduced with the growth in  $Re$ , the growth of  $T_w/T_b$  for  $T_{Tg} > 0$  and with the decrease of  $T_w/T_b$  for  $K_{Tg} < 0$  and is independent of gas pressure. The experimental results are generalized in the form of relationships between  $K$  and  $K_{Tg}$ ,  $Re$ ,  $T_w/T_b$ . 3 ill., 2 ref. Authors abstract.

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UDC 538.25

BAYBIKOV, B. S., DREYTSER, G. A., KALININ, E. K., and NEVEROV, A. A., Moscow Aviation Institute

"The Effect of Reynolds Number on the Nonstationary Convection Heat Exchange in a Tube During a Change in Heat Load"

Moscow, Teplofizika Vysokikh Temperatur, Vol 10, No 6, Nov-Dec 72, pp 1243-1255

Abstract: Experimental study was carried out of the nonstationary local heat output with a constant air consumption in an electrically heated tube and intermittent change in heat liberation in a thin wall tube. It has been established that the nonstationary heat output differs substantially from the calculated value obtained with an assumption of a quasistationary state. Increase in  $Re$  leads to a diminished effect of the nonstationary state of  $Nu$ . It has been shown that a change in air pressure has no effect on the heat output both during the stationary and nonstationary heat load. Experimental results have been generalized in form of the function  $K = f(K_{T_0}, Re, T_w/T_b)$ . The calculations carried out show that with a nonstationary heat load on the tube wall, the turbulent characteristic of air stream should be substantially different from the quasistationary ones.

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BAYBORODIN, Yu. V., BLOKHIN, L. N., STROGALEV, M. A.

"Synthesis of Optimal Structure of a System for Semiautomatic Stabilization of an Aircraft in a Glide"

Vtoraya Chetayevsk. Konf. po Analit. Mekh., Ustoychivosti Dvizheniya i Optimal'n. Upr., 1973. Annotatsii Dokl. [Second Chetayev Conference on Analytic Mechanics, Stability of Motion and Optimal Control, 1973. Abstracts of Reports -- Collection of Works], Kazan', 1972, p 55 (Translated from Referativnyy Zhurnal Mekhanika, No 5, 1973, Abstract No 5A293).

Translation: The problem of semiautomatic stabilization of an aircraft in its glide in the longitudinal plane is analyzed from the standpoint of the linear theory of optimal filters. As an example, the synthesis of the optimal structure for a device for conversion of the control signal with semiautomatic landing approach using a visualization system is studied. The optimal transfer function is produced for a correcting device, as well as an expression for dispersion of the error of an optimal system.

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Vacuum Tubes

USSR

UDC 621.385.642.3.001.24

BAYBURIN, V.B.

"Calculation Of Electron Paths In A Multicavity Magnetron With Consideration Of The Space Charge"

Radiotekhnika i elektronika, Vol XVII, No 3, Mar 1972, pp 645-647

Abstract: In a work by V.B. Bayburin and G.L. Sobolev (Radiotekhnika i elektronika, 1967, 12, 3, 479) solutions are obtained for electron paths with the space charge fields taken into account, valid for the region of the decelerating phases of a high-frequency field ( $-\pi/2 \div \pi/2$ ). In the present work the electron paths are found for the total interval of phases ( $2\pi$ ) of a high-frequency field, with the Coulomb fields of the adjacent spokes taken into account, and the convergence of the approximations and the role of the elements of the Coulomb field are evaluated. The analysis uses the circuit of a plane magnetron and the basic assumptions, symbols and methods of operation of the work by Bayburin and Sobolev. 2 fig. 1 tab. 2 ref. Received by editors, 8 May 1971.

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1/2 014 UNCLASSIFIED PROCESSING DATE--30OCT70  
TITLE--INHIBITION OF DIMETHYLFORMAMIDE HYDROLYSIS -U-  
AUTHOR--(04)--LYAKUMOVICH, A.G., PANTUKH, B.I., BAIBURINA, Z.S., ZAKHAROVA,  
N.V.  
COUNTRY OF INFO--USSR  
SOURCE--KHIM. PROM. (MOSCOW) 1970, 46(3), 182-3  
DATE PUBLISHED--70  
SUBJECT AREAS--CHEMISTRY  
TOPIC TAGS--FORMIC ACID, AMIDE, HYDROLYSIS, AUTOCATALYSIS, FURFURAL, AMINE  
DERIVATIVE, HEXAMETHYLENETETRAMINE  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRA--2000/0825 STEP NO--UR/0064/70/046/003/0182/0183  
CIRC ACCESSION NO--AP0124492  
UNCLASSIFIED

2/2 014

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0124492

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE HYDROLYSIS OF HCONME SUB2 IN THE PRESENCE OF 10PERCENT OF H SUB2 O AT 120DEGREES IS AUTOCATALYTIC AND THE CONC. OF HYDROLYSIS PRODUCTS RAPIDLY INCREASES WITH TIME, TO SIMILAR TO 0.5 MOLE-L. AFTER 3 HR. THE ADDN. OF UROTROPINE (0.2PERCENT) TOGETHER WITH SOME METALLIC FE INHIBITS THE HYDROLYSIS OF HCONME SUB2 E.G., NO HCO SUB2 H IS FORMED IN THE SYSTEM AFTER UP TO 30 DAYS AT 125DEGREES; FURFURAL (AND TO A LESSER EXTENT BZH) ALSO INHIBIT THE HYDROLYSIS OF I, WHILE PHNO SUB2 AND OTHER NITRO COMPS. ARE EFFECTIVE INHIBITORS.

UNCLASSIFIED

1/2 020 UNCLASSIFIED PROCESSING DATE--04DEC70  
TITLE--EFFECT OF THE SALT CONTENT IN WATER ON EVAPORATION IN SOLAR STILLS  
-U-  
AUTHOR--(03)-BAYBUTAYEV, K.B., ACHILOV, B.M., KAMAEVA, G.  
COUNTRY OF INFO--USSR  
SOURCE--GELIOTEKNIKA 1970, (2), 83-5  
DATE PUBLISHED-----70  
  
SUBJECT AREAS--MECH., IND., CIVIL AND MARINE ENGR  
TOPIC TAGS--SOLAR DISTILLATION, DISTILLATION EQUIPMENT, METAL CORROSION,  
SEA WATER DESALTING, EVAPORATION, EVAPORATOR, WATER PURIFICATION,  
SALINITY  
  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRA--3007/0460 STEP NO--UR/0377/70/000/002/0083/0085  
CIRC ACCESSION NO--AP0135923  
UNCLASSIFIED

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UNCLASSIFIED

PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AP0135923

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. UNDILD. AND DILD. WATER SAMPLES FROM VARIOUS LAKES WITH WIDELY VARYING CONTENT OF NA, K, MG, CA, SO SUB4 PRIME2 NEGATIVE, CL PRIME NEGATIVE, AND HCO SUB3 PRIME NEGATIVE WERE TESTED. INCREASING SALINITY OF WATER CAUSED A SLIGHT DECREASE IN SOLAR STILL PRODUCTIVITY, AN INCREASE IN CORRODING ABILITY OF WATER, BUT DID NOT SHOW ANY EFFECT ON THE QUALITY OF DISTILLATE. FACILITY: BUKHAR. GOSPEDINST., BUKHARA, USSR.

UNCLASSIFIED

USSR

BAYCHENKO, I. P., Candidate of Biological Sciences, STEPANOV, Ye. I., and FEDOROV, Ye. N., Candidate of Biological Sciences, Leningrad Scientific Research Institute of Physical Culture

"Improvement of Vestibular Function in Young Skiers"

Moscow, Teoriya i Praktika Fizicheskoy Kul'tury, No 1, 1972, pp 60-63

Abstract: Ninety-eight 11- to 12-year old boys and girls were given 16 skiing lessons over a period of 9 weeks on different kinds of terrain (rugged, flat, combination of rugged and flat) to determine the effect of terrain on the acquisition of motor skills and the effect of practice on different kinds of terrain on vestibular function. The children who skied on rugged terrain did best. Beneficial changes were observed in the vestibular analyzer in the form of decreased excitability on the periphery and increased resistance to extreme stimuli. By the end of the program, all the groups showed improvement in technique, speed, and balance, but the latter was most developed in those who skied on rugged terrain.

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BAYCHENKO, I. P. and VASHCHILA, V. V., Leningrad Scientific Research Institute of Physical Culture, Leningrad

"Changes in the Reproduction of a Movement at a Young Age During Adequate Stimulation of the Vestibular Analysor"

Moscow, Teoriya i Praktika Fizicheskoy Kul'tury, Vol 34, No 1, Jan 71, pp 56-59

Abstract: Measurements of the amplitude of bending of the right elbow joint following rotation of the body to the left were carried out on children 4-13 yrs old undergoing systematic training in athletics (diving and gymnastics) and children not engaged in such training. Reproduction of the assigned movement (bending of the elbow at an angle of  $20^{\circ}$ ) was significantly altered by the preceding rotation in the majority of cases; the amplitude was increased in most instances in comparison with that which had been assigned. With increasing age and increased athletic proficiency of the children, the change in amplitude following rotation and also the time required for  
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BAYCHENKO, I. P. and VASHCHILA, V. V., Teoriya i Praktika Fizicheskoy Kul'tury, Vol 34, No 1, Jan 71, pp 56-59

reproduction of the movement decreased. Under the effect of rotational loads, the balance between inhibition (reduced amplitude) and stimulation processes (increased amplitude) was changed toward stimulation. With increasing age and advancing athletic proficiency, the magnitude of this change decreased -- i.e., adequate stimulation of the vestibular apparatus produced a lesser shift in the relationship between inhibition and stimulation.

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Soviet Inventions Illustrated, Section II Electrical, Derwent,

2/70

243865 WATER FLOW METER is used for metering the outflow of water from hydrotechnical installations. In view of the necessity of calibrating beforehand the rotor vane meters working at an angle, specially in case of very low or very high speeds, this invention simplifies the operation of control checking when installing hydraulic plants of various types. This is achieved by measuring the level of the free water surface on the crest of the waterflow, say, in front of the main gate and upper water of the installation and in relation to the pressure exerted, a curve is drawn showing the distribution of pressure.

30.1.67 as 1129506/18-10.V.S.SERKOV & L.N.BAYCHIKOV.  
(30.9.69) Bul 17/14.5.69. Class 42a. <sup>INT. CL. G</sup> OIF.

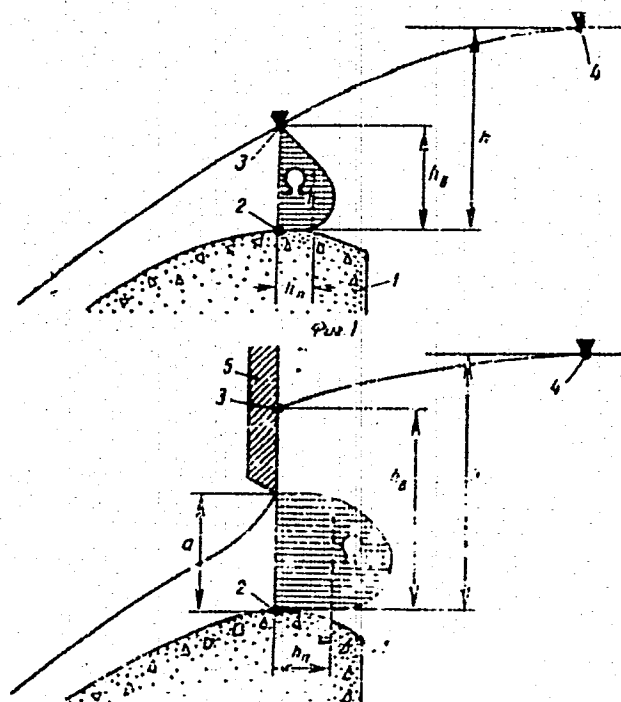
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USSR

UDC: 621.373.53(088.8)

BAYCHYUS, R.-Kh. P., KAVALYUNAS, S.-I. Yu.

"A Device for Shaping Sawtooth-Stepped Voltage"

USSR Author's Certificate No 263655, filed 5 Apr 67, published 21 Sep 70  
(from RZh-Radiotekhnika, No 6, Jun 71, Abstract No 6A320 P)

Translation: A device is proposed for shaping a sawtooth-stepped voltage. The device contains a flip-flop connected to the base of a transistor in an oscillator with capacitive feedback, and an emitter follower. As a distinguishing feature of the patent, the device is designed for shaping a "step" on any section of the linear part of the sawtooth voltage. For this purpose, a two-stage DC amplifier and discharge capacitor are added, the base of the transistor in one stage of the DC amplifier being connected to the output of the emitter follower, while the collector of the transistor in the other stage is connected through the discharge capacitor to the base of the oscillator transistor.

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USSR

BAYDA, T. A., Candidate of Biological Sciences, Kazakh Institute of Plant Protection

"Contamination of the Soil With Organophosphorus Pesticides"

Alma-Ata, Zdravookhraneniye Kazakhstana, No 7, 1970, p 72

Translation: A large quantity of toxic chemicals has recently been added directly or indirectly to the soil because of the intensive use of chemicals to protect plants. The pesticides reach the soil mainly as a result of wind action, runoff from plants with irrigation water, and so forth. It has been estimated that at least half of all the toxic chemicals used penetrate the soil in one way or another. In Kazakhstan these chemicals are widely used to protect vegetables, fruit, and grains from pests. Sometimes the soil under vegetables (cabbage) is treated 4 to 5 times in the course of a growing season. The persistence of organophosphorus preparations in the soil was studied on irrigated plots of the experimental facility of the Kazakh Institute of Plant Protection (the work was done under the direction of Zh. L. Lukpanov, Candidate of Biological Sciences). The soil is dark-chestnut and calcareous. The plot was irrigated 6 to 8 times during the growing season. Soil samples were taken from two levels (0-10 and 10-20 cm) 15, 30, and 60 days after the last treatment. Each sample weighed about a kilogram. Pesticide residues were studied on a plot where cabbage was grown. The

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BAYDA, T. A., Zdravookhraneniye Kazakhstana, No 7. 1970. p 72

chemicals were applied from June through August as follows: chlorophos - during the last 20 days of June (liquid application, 1200 liters/ha; 0.2% chlorophos solution); phosphamide and metaphos - in mid-July and the last 20 days of August (800 liters/ha of liquid phosphamide; 0.2% concentration). Wofatox (metaphos) was applied at the rate of 25 kg/ha (wofatox dust, 2.5%). The fertilizers regularly used in this area were applied to the soil. Residual amounts of the pesticides were determined by T. G. Golubev's method (1964). They were extracted from the soil with ether in a shaker for one hour, after which the contents were filtered; 2 ml of the filtrate was placed in a test tube and allowed to evaporate. Then 2 ml of distilled water was poured into the test tube, thoroughly agitated, 0.5 ml of unpreserved horse serum added, and the mixture left to stand for half an hour at room temperature. Substrate (4.5 ml) prepared before the start of the experiment was added to each test tube. The contents of the test tube were mixed and placed in an incubator at 37°C for 35 minutes. Then 5 drops of physostigmine (0.02% physostigmine solution in chloroform) was added to each. The test tubes were agitated and the heat measured in a photoelectric calorimeter with a red light filter. Calibration curves for chlorophos, phosphamide, and metaphos were plotted from the technical preparations; special account was taken of the amount of active substance. The amount of pesticide was converted into milligrams per

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USSR

BAYDA, T. A., Zdravookhraneniye Kazakhstana, No 7, 1970, p 72

kilogram of oven-dried soil, with due regard for the dilutions. Observations showed that organophosphorus pesticides quickly disappear from the soil, because soil contains a large amount of organic matter (the humus level is 40 to 50 cm deep, and the humus content ranges from 3.0 to 3.5%). Edwards (1957), who has been very active in studying the persistence of pesticides in soil, thinks that their persistence is inversely related to the amount of organic matter present. Chlorophos was the first of the pesticides used on cabbage to disappear (15 days after application it could not be found). Metaphos remained somewhat longer: 0.88 mg/kg was found 2 weeks after the second application, but it completely disappeared after 4 weeks. Phosphamide proved to be the most persistent. It remained for 8 weeks. Some 4 to 5 mg/kg could be detected 60 days after the second treatment. There was some slight leaching of the pesticides into the lower soil levels. The rapid disappearance of organophosphorus pesticides prevents their accumulating and polluting the soil. The bulk of the pesticides remains in the upper levels of the soil.

3/3



BAYDA, V. D.

50:JPRS 54354  
29 OCT 1971

UDC: 616-08"[362.11+362.121]:  
658.362(049.3)

EXPERT EVALUATION OF THE QUALITY OF THE THERAPEUTIC PROCESS IN HOSPITALS AND  
POLYCLINICS

(Medicine)

[Article\* by V.D. Bayda and E.O. Yaksha. Donetsk Oblast Central Clinical Hospital  
(chief physician: V.D. Bayda, candidate of medical sciences); Moscow, Sovetskoye  
Zdravookhraneniye, Russian, No 9, 1971, submitted 3 March 1971, pp 21-25]

For analysis of the indices of national health and operation of medical  
institutions, public health organizers use data reflecting the quantitative  
rather than qualitative aspect of various processes. Quite often, the quality  
of diagnosis, therapy, prophylaxis, of the work of physicians and institutions  
is assessed on the basis of rather subjective and random facts.

In order to assure objective monitoring of the quality of the therapeutic  
process, the method of expert evaluation has been used since 1963 at the Donetsk  
Obast Central Clinical Hospital. Using this method we arrive first of all to  
demonstrate the factors on which a given adverse index depends. We then compile  
an expert evaluation card consisting of factor-questions that need to be  
checked. The expert gathers at least 100 case histories or outpatient cards  
and checks each question on each of these records. The end result consists of  
data in absolute figures and percentages obtained for each question on the  
expert evaluation card which are indicative of defects and flaws in the work.  
For precise determination of the number of case histories or outpatient cards  
that should be used for processing (size of sample) well known formulas may be  
used:

$$\Delta = \frac{t \cdot \sqrt{p \cdot q}}{n} \text{ or } \Delta = t \cdot \sqrt{\frac{p \cdot q}{n}}$$

hence

where  $\Delta$  is the maximum mean error of the index;  $m$  is the mean index error;  $p$  is  
the share of the trait in the general aggregate;  $q = 1 - p$ ;  $n$  is the number of  
case histories or charts that should be used for processing;  $t$  is the confidence  
coefficient.

\*Published for the purpose of discussion — editor.

MEDICINE

1/2 021 UNCLASSIFIED PROCESSING DATE--04DEC70  
TITLE--PROCESSES FOR INITIATING COLUMN CHARGES OF THE SIMPLEST EXPLOSIVES  
-U-  
AUTHOR--(06)-DYADECHKIN, N.I., LOSEV, V.G., ZHELTETSKIY, A.YE., BAYDA,  
V.I., NAZARCHUK, M.N., SEMKO, G.I.  
COUNTRY OF INFO--USSR  
SOURCE--GORN. ZH. 1970, 145(3), 36  
DATE PUBLISHED-----70  
SUBJECT AREAS--ORDNANCE  
TOPIC TAGS--AMMONIUM NITRATE, DIESEL FUEL, DETONATION, COMMERCIAL  
EXPLOSIVE/(U)AS8 GRANULIT EXPLOSIVE  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRA--3007/0763 STEP NO--UR/0127/70/145/003/0036/0036  
CIRC ACCESSION NO--AP0136200

2 B

UNCLASSIFIED



2/2 021

UNCLASSIFIED

PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AP0136200

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. COLUMN CHARGES OF IGDANIT (A MIXT. OF 7 L. DIESEL FUEL WITH 100 KG GRANULATED NH SUB4 NO SUB3), GRANULIT AS-8, AND ZERNOGRANULIT (THE COMPN. OF THE LAST TWO EXPLOSIVES IS NOT GIVEN) WERE INITIATED. TO AVOID DUST FORMATION WHEN FILLING THE BLAST HOLES WITH ZERNOGRANULIT, 4PERCENT WATER OR DIESEL FUEL WAS ADDED TO THIS EXPLOSIVE. THE EXPTS. WERE DONE IN MINES UNDERGROUND, IN STEEL PIPES 4-4.5 M TIMES 100 MM DIAM., WITH 2.5-MM WALLS. THE EXPLOSIVES DETONATED WHEN INITIATED BY 2 LINES OF DETONATING CORD PLACED ALONG THE WHOLE LENGTH OF THE CARTRIDGES, OR BY TWO DONOR CHARGES (MIN. WEIGHT OF 0.4 KG EACH), CONNECTED BY TWO LINES OF DETONATING CORD.  
FACILITY: KRIVOROZH. GORNORUD. INST., KRIVOI ROG, USSR.

UNCLASSIFIED

Glass and Ceramics

USSR

UDC (564.19+546.23+546.56):666.1

ALIMBARASHVILI, N. A., and BAYDAKOV, L. A., Leningrad State University

"Properties of Arsenic-, Selenium-, and Copper-Based Glasses"

Moscow, Neorganicheskiye Materialy, Vol 9, No 12, 1973, pp 2108-2111

Abstract: Measurements were made of the index of refraction, the threshold of light absorption, and the density of arsenic-, selenium-, and copper-based glasses. The samples were x-ray amorphous. Plots show the relationships of density  $d$ , index of refraction  $N$ , polarizability  $\alpha$ , threshold of light absorption  $\lambda_{\frac{1}{2}}$ , and Lanzheven (transliterated) diamagnetism  $\chi_d$  to composition for experimental results. Calculated results for  $N$ ,  $\alpha$ , and  $\chi_d$  agree closely with experimental results. The basic composition was determined as  $\text{CuAsSe}_2$ .

USSR

UDC (537.311+621.317.412):549.31:546.19

NOVOSELOVA, N. A., BAYDAKOV, L. A., STRAIKHOV, L. P.

"Study of the Magnetic Susceptibility of Vitreous Arsenic Sulfides"

Leningrad, Vestnik Leningradskogo universiteta, No 10, Fizika i Khimiya, No 2, May 71, pp 118-124

Abstract: Earlier research on the magnetic susceptibility of vitreous alloys  $\text{AsS}_x$  ( $1.25 \leq x \leq 18$ ) is reviewed. A table containing susceptibility measurements of arsenic sulfides with As contents ranging from 9 to 44 at.% is presented. It is shown that all compositions of the vitreous arsenic-sulfur system containing elemental sulfur which was heat treated by various techniques are diamagnetic materials and that their magnetic susceptibility is independent of the field intensity. The nonadditive relationship between the magnetic susceptibility of the glasses and their composition is attributed to both structural and chemical transformations in them. Use was made of the Dorfman method to separate the experimental susceptibility values  $\chi_e$  into Langevin diamagnetic  $\chi_d$  and V. V. paramagnetic components  $\chi_p$ . The extremely low value of Van Vleck paramagnetism conforms to the  $\text{As}_2\text{S}_5$  compound and is 1/2

USSR

KOVOSELOVA, N. A., et al, Vestnik Leningradskogo universiteta,  
No 10, Fizika i khimiya, No 2, May 71, pp 118-124.

governed by the tetrahedral configuration of the structural units of  $AsS_{5/2}$  with equivalent  $sp^3$  hybridized As-S chemical bonds. The glass with the stoichiometric composition of  $As_2S_3$  appears to have maximum diamagnetism. The chemical and structural transformations in the glasses of the As-S system are discussed and the existence of an eutectic phase of  $As_2S_5$  and sulfur in the 13 at.% As range is suggested.

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1/2 014 UNCLASSIFIED PROCESSING DATE--11DEC70  
TITLE--INDIRECT INTERNUCLEAR INTERACTION AND NMR CHEMICAL SHIFT IN ALPHA  
AND BETA THALLIUM IODIDE -U-  
AUTHOR--(03)-BAYDAKOV, L.A., NOVOSELOV, S.K., STRAKHCY, L.P.  
COUNTRY OF INFO--USSR **B**  
SOURCE--FIZ. TVERD. TELA 1970, 12(4), 1173-5  
DATE PUBLISHED-----70  
SUBJECT AREAS--PHYSICS  
TOPIC TAGS--IODIDE, NUCLEAR MAGNETIC RESONANCE, CHEMICAL BONDING, THALLIUM  
COMPOUND, CHEMICAL BONDING, MOLECULAR INTERACTION  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRA--3007/0073 STEP NO--UR/0181/70/012/004/1173/1175  
CIRC ACCESSION NO--AP0135770  
UNCLASSIFIED

2/2 014

UNCLASSIFIED

PROCESSING DATE--11DEC70

CIRC. ACCESSION NO--AP0135770

ABSTRACT/EXTRACT--(U) GP-O- ABSTRACT. NMR WAS INVESTIGATED OF PRIME205 TL AND PRIME203 TL IN LOW TEMP. AND HIGH TEMP. MODIFICATIONS OF TLI WITH NATURAL CONTENT OF THE ISOTOPES OF TL. CHANGE IN THE CHEM. SHIFT WAS MEASURED DURING THE TRANSITION. THE 2ND MOMENTS OF THE PRIME205 TL AND PRIME203 TL LINES IN ALPHA AND BETA TLI ARE MUCH LARGER THAN CALCD. WITH ONLY THE DIRECT DIPOLE DIPOLE INTERACTION. IN ALPHA TLI, THE 2ND MOMENT OF THE PRIME203 TL LINE IS LARGER THAN THAT OF PRIME205 TL WHICH INDICATES A CONSIDERABLE HETEROPOLAR BONDING BETWEEN THE TL ATOMS. THE 2ND MOMENTS OF THE LINES OF TL ISOTOPES IN BETA TLI ARE EQUAL WITHIN EXPTL. ERROR. THIS INDICATES A WEAK HETEROPOLAR BONDING TL, TL IN THIS MODIFICATION, AND A LARGE LINEWIDTH AND LARGE NEG. CHEM. SHIFTS A CONSIDERABLE COVALENT BOND IN TL IN THE YELLOW AS WELL AS IN THE RED MODIFICATIONS. FACILITY: LENINGRAD. GOS. UNIV. IM. ZHDANOVA, LENINGRAD, USSR.

UNCLASSIFIED

USSR

UDC: 51.681.14.155

BAYDAKOV, M. P., KRASIL'NIKOV, N. N., and PASTUKHOV, O. V.

"Human Ability to Distinguish Images in Gaussian Noise"

Novosibirsk, Avtometriya, No 1, 1973, pp 7-14

Abstract: In the practical design of radar and television equipment, the engineer comes up against the problem of the operator's ability to distinguish halftone images in a background of additive noise with a normal distribution law, the problem of when the detected images have substantial linear frequency distortion, and the problem of when the noise is correlated -- i.e., when the spectral intensity of the noise is a function of the frequency. The purpose of this paper is investigate the possibility of using the theory of statistical solutions for describing the operator's reactions under these conditions. Results of experiments the authors conducted in this investigation are described along with the experimental equipment. Observers were tested on their ability to distinguish images in Gaussian noise whose spectral intensity is independent of the frequency, images with linear frequency distortion, and images with varying levels of distortion. The authors conclude that the theory of statistical solutions is applicable to the problem.

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USSR

UDC: none

BAYDAKOV, M. P., PASTUKHOV, O. V., POTOTSKIY, V. K.

"On the Probability of Distinguishing Images Without a Fixed Location"

Tr. Leningr. in-t aviats. priborostr. (Works of the Leningrad Institute of Aviation Instrument Building), 1971, vyp. 69, pp 38-42 (from RZh-Radio-tekhnika, No 6, Jun 71, Abstract No 6G2)

Translation: The paper deals with the problem of distinguishing images against a background of a noise field in the case where the location of the image is not precisely known. Formulas are presented for evaluating the probability of distinguishing images without a fixed position. Resumé.

1/1



USSR

UDC: 534.2

BAYDEDAYEV, A.

"On the Theory of Sound Propagation in an Isotropic Medium"

V sb. Primeneniye ul'traakust. k issled. veshchestva (Application of Ultra-acoustics to the Study of Matter--collection of works), vyp. 25, Moscow, 1971, pp 30-33 (from RZh-Fizika, No 6, Jun 72, Abstract No 6Zh530)

Translation: The paper presents the final results of calculation of the absorption coefficient  $\alpha$  and the speed of sound for liquids from equations of nonequilibrium thermodynamics. Various limiting cases are considered. It is shown in particular that the Stokes  $\alpha$  and the  $\alpha$  due to dilatational viscosity are not additive. An expression is found for the velocity of the shear wave which differs from that cited in the literature. For liquids with higher viscosity, the velocity is proportional to  $\omega^2$ . The absorption coefficient  $\alpha$  passes through a maximum depending on the viscosity. L. Z.

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AA0052408

UR 0482

Soviet Inventions Illustrated, Section III Mechanical and General,  
Derwent, 2-70

243779 EAR PROTECTOR consists of ear pieces with soundproofing material and a head-band and is fitted with an ear-plug (7) of parabolic shape. When the ventilation apertures (2) are opened to counteract perspiration, the plate (5) releases the spring (8) which pushes the plug to close the outer aural duct. This compensates for the increase in noise level caused by opening the ventilation apertures.

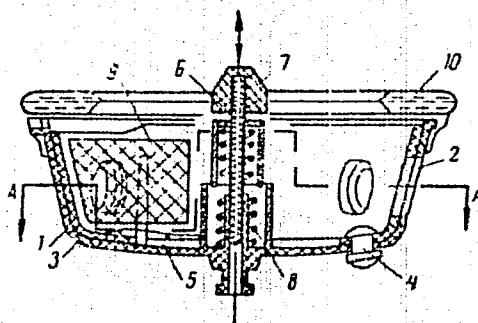
23.5.68. as 1241987/31-16, BAYDIN, V.S. Labour Protection Inst. (14.5.69) BUL. 17/19.9.69. Class 30d, Int. Cl. A 61f.

Vsesoyuznyy Nauchno--Issledovatel'skiy Institut Okhrany

Truda VTsSPS

19821031

AA0052408



19821032

USSR

UDC 621.762.01

SEVERDENKO, V. P., LOZHECHNIKOV, YE. B., and BAYEK, M. A.,  
Physico Technical Institute, Academy of Sciences Belorussian SSR

"Problems of Determining the Power Parameters of Roll Compacting"

Minsk, Izvestiya Akademii Nauk BSSR, Seriya Fiziko-Tekhnicheskikh  
Nauk, No 4, 1971, pp 124-127

Abstract: The power parameters of roll compacting have been studied previously, and the basic laws of distribution of the specific forces of pressure of the metal on the rolls, friction, total pressure, and rolling power have been established. However, a number of problems, such as the presence of nondeformable inclusions (carbides, oxides), the effect of the metal thickness, and other factors on the power conditions of roll compacting have not been considered. In order to study these power parameters, experiments were performed with respect to roll compacting of strips from type PZhZM powdered iron (GOST 9849-61), type PNK-1 nickel powder (GOST 9722-61), type PM-2 powdered copper (GOST 4960-49), and precipitation hardened nickel and copper. The dependence of the variation of these parameters on the thickness  
1/2

USSR

SVERDENKO, V. P., et al., Izvestiya Akademii Nauk BSSR, Seriya Fiziko-Tekhnicheskikh Nauk, No 4, 1971, pp 124-127

of strips of identical density was established. A formula for calculating the specific energy of roll compacting which takes into account the density and thickness of the strip was obtained:

$$\lg A_{\text{spec}} = k\gamma_s - ch_s,$$

where  $A_{\text{spec}}$  is the specific rolling power, kilowatts-hour/ton;  $k$  is a coefficient which depends on the powdered material;  $\gamma_s$  is the strip density, g/cm<sup>3</sup>;  $h_s$  is the strip thickness, mm; and  $c$  is the proportionality coefficient taking into account the effect of strip thickness. Empirically determined values of the coefficients  $k$  and  $c$  are presented for the materials studied.

2/2

54 -

Powder Metallurgy

USSR

UDC 621.762.01

SEVERDENKO, V. P., LOZHECHNIKOV, YE. B., and BAYEK, M. A.,  
Belorussian Polytechnical Institute

"Production and Investigation of Powders of Dispersion-Hardened  
Compositions Based on Nickel and Copper"

Minsk, Akademiya Nauk BSSR, Izvestiya, Seriya Fiziko-Tekhnich-  
eskikh Nauk, No 2, 1970, pp 115-119

Translation: Results are presented of the preparation and  
investigation of powders of dispersion-hardened compositions  
based on nickel and copper with aluminum, silicon, zirconium,  
and hafnium oxides. A description is given of a unit for mix-  
ing and dispersion of powder compositions in an ultrasonic field.  
The results of an electron microscopic investigation of the  
degree of particle dispersion are presented.

1/1

UDC

UDC 665.637:547.313(088.8)(47+57)

KEL'TSEV, V. V., BAYENKEVICH, V. V., KOROBKIN, I. F., SOLOV'YEV, N. YE., MUKHINA, T. N., SHERESHEVSKIY, I. S., All-Union Scientific Research Institute of Natural Gas

"Method of Obtaining Lower Olefins"

USSR Author's Certificate No 233655, filed 22 May 65, published 14 May 69 (from RZh-Khimiya, No 24 (II), 25 Dec 69, Abstract No 24 P158 P)

Translation: In a method of obtaining lower olefins, for example,  $C_2H_6$  and  $C_3H_8$ , by high-temperature pyrolysis of hydrocarbon crude on a solid circulating heat carrier, to increase the product yield and equipment productivity can be raised by directing the lower olefins obtained in the process to the zone of moderate-temperature pyrolysis, in which additional starting crude is introduced countercurrentwise.

A. A. N.

1/1

1/2 021 UNCLASSIFIED PROCESSING DATE--30OCT70  
TITLE--EFFECT OF SODIUM CHLORIDE IN THE INTENSITY OF THE SPECTROGRAPHIC  
LINES OF NIOBIUM AND TANTALUM -U-  
AUTHOR-(03)-TARASEVICH, N.I., SEMENENKO, K.A., BAIER, G.  
COUNTRY OF INFO--USSR  
SOURCE--ZH. ANAL. KHIM. 1970, 25(2), 281-4  
DATE PUBLISHED-----70  
SUBJECT AREAS--CHEMISTRY, MATERIALS, EARTH SCIENCES AND OCEANOGRAPHY  
TOPIC TAGS--SODIUM CHLORIDE, SPECTROGRAPHIC ANALYSIS, NIOBIUM, TANTALUM,  
CARBON ELECTRODE, ROCK, CHEMICAL ANALYSIS  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRA--1994/1893 STEP NO--UR/0075/70/025/002/0281/0284  
CIRC ACCESSION NO--AP0115712

*Bayer G.*



2/2 021

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0115712

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE EFFECT OF NACL ON THE INTENSITY OF NB AND TA SPECTRAL LINES WAS STUDIED TO INCREASES INTENSITY OF THEIR DETN. A NEW METHOD OF INTRODUCING NACL INTO THE LIGHT SOURCE BY SATN. OF THE C ELECTRODE WITH THE NACL SOLN. IS PROPOSED. C ELECTRODES (LOWER) ARE FIRED PREVIOUSLY IN A 6-A ARC FOR 30 SEC AND WHILE HOT ARE IMMERSSED IN 10PERCENT NACL FOR 5 MIN. THE UPPER ELECTRODE IS NOT SATD. WITH NACL. THERE IS A LINEAR DEPENDENCE BETWEEN THE INTENSITY OF SPECTRAL LINES OF THSES ELEMENTS AND THEIR CONC. IN THE RANGE OF 1 TIMES 10 PRIME NEGATIVE3 MINUS 3.6 TIMES 10 PRIME NEGATIVE2PERCENT TA AND 2 TIMES 10 PRIME NEGATIVE3 MINUS 1 TIMES 10 PRIME NEGATIVE2PERCENT NB. NB DOES NOT AFFECT TA DETN. IN THE NB-TA RATIOS OF 10:1 AND 1:1. THE SENSITIVITY LIMIT OF THE DIRECT TA DETN. IS INCREASED BY ONE ORDER TO 2 TIMES 10 PRIME NEGATIVE 7 G (2 TIMES NEGATIVE3PERCENT). THE VARIATION COEFF. IS 6PERCENT. THIS METHOD CAN BE USED FOR THE DETN. OF NB AND TA IN GRANITES. FACILITY: MOSCOW STATE UNIV., MOSCOW, USSR.

USSR

UDC 621.778.07

GUN, G. Ya., POLUKHIN, P. I., BAYER, K., and BELOV, M. I.

"Calculating the Deformed State in Drawing Shaped Sections"

Plasticheskaya Deformatsiya Metallov i Splavov, Moscow, No 64, "Metallurgiya," 1970, pp 184-193

Translation: A description is given of an experiment to determine the picture of metal flow in the transverse plane during the drawing of shaped sections. On the basis of experimental data, a general method is developed for physical modeling of metal flow in a transverse direction on the basis of the electrohydrodynamic analogy. Analytical and graphic methods of determining the deformed state of the metal after drawing are worked out on the basis of the use of conformal transformation and electrohydrodynamic modeling. Twelve figures and four bibliographic entries.

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USSR

BAYER, V. N., KATKOV, V. M., STRAKHOVENKO, V. M.

"Higher-Order Effects in the External Field: Generation of Pairs by Particles"

Moscow, Yadernaya Fizika, Vol 14, No 5, 1971, pp 1020-1026

Abstract: Because the analysis of higher orders of electromagnetic interaction is of interest in problems of the motion of high-energy particles through an external magnetic field, this paper uses such an analysis in the example of the process of pair generation by a particle of this type. The probability of the occurrence of this process is computed by an operator method worked out by the first two of the authors named above and published in earlier articles (Zhurnal eksperimental'noy i teoreticheskoy fiziki, 53, 1967, p 1478, ZhETF, 55, 1968, p 1542), and a formula is obtained for the probability of pair generation by a photon per unit time. The asymptotic values of the probability are examined using the method of equivalent photons. Concluding, the authors note that the results of their work permit solving

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...USSR

BAYER, V. N. et al, Yadernaya Fizika, Vol 14, No 5, 1971, pp  
1020-1026

the problem of degradation of the energy of high-energy particles  
entering a strong external field. They express their gratitude  
to V. S. Fadin for his useful comments.

2/2

Acc. Nr: AP0014697

Ref. Code: UR 0463

PRIMARY SOURCE: Molekulyarnaya Biologiya, 1970, Vol 4, Nr 1,  
pp 97-109

THE PRIMARY STRUCTURE AND SOME PHYSICAL PROPERTIES  
OF YEAST VALINE TRANSFER RNA 3

A. I. KRUTILINA, A. D. MIRZABEKOV, T. V. VENKSTERN  
and A. A. BAYEV

Institute of Molecular Biology, Academy of Sciences, USSR, Moscow

Valine transfer RNA 3 was isolated from *Saccharomyces cerevisiae*. Its content was 0.3 per cent in the total tRNA and 5—7 per cent in the valine tRNA. The purity of the preparation was 75—80 per cent. The partial analysis of pyrimidyl- and guanyl-RNase oligonucleotides of tRNA<sup>Val</sup> revealed the nucleotide sequence of tRNA<sup>Val</sup> to be probably the same as compared with that of tRNA<sup>Val</sup><sub>1</sub>. Chromatography on MAK (methylated serum albumin sorbed on kieselgel) column, gel filtration on Sephadex and melting curve determination of

1/2

REEL/FRAME

19771431

02

AP0044697

tRNA<sub>3</sub><sup>Val</sup> and tRNA<sub>1</sub><sup>Val</sup> gave identical results. The distribution coefficients of tRNA<sub>1</sub><sup>Val</sup> and tRNA<sub>3</sub><sup>Val</sup> in isopropanol-formamide-phosphate bufer, pH 6.0, were the same. Thus the physical properties of tRNA<sub>1</sub><sup>Val</sup> and tRNA<sub>3</sub><sup>Val</sup> after their purification had no significant differences. The different behavior of tRNA<sub>1</sub><sup>Val</sup> and tRNA<sub>3</sub><sup>Val</sup> in the countercurrent distribution system may be explained by the assumption that tRNA<sub>3</sub><sup>Val</sup> is an unstable physical modification of tRNA<sub>1</sub><sup>Val</sup>.

2/2

19771432

lc

Acc. Nr:

AP0044694

Ref. Code: UR 0463

PRIMARY SOURCE: Molekulyarnaya Biologiya, 1970, Vol 4, Nr 1,  
pp 76-96

THE PRIMARY STRUCTURE OF VALINE TRANSFER RNA I.  
3. THE RECONSTRUCTION OF THE MOLECULE

Mirzabekov, A. D.; Aksel'rod, V. D.

Venkstern, T. V.; Li, L.; Krutilina, A. I.; Bayev, A. A.

Institute of Molecular Biology, Academy of Sciences, USSR, Moscow

The final stages of analysis of the valine tRNA I from *Saccharomyces cerevisiae* and the reconstruction of the molecule is described. Large fragments (metamers) were obtained from the separated 3'- and 5'-halves of tRNA<sup>Val</sup> and their oligonucleotide composition was determined by means of a microchromatographic method. The tRNA<sup>Val</sup> primary structure was formulated.

REEL/FRAME

19771428

02 kc

1/2 038 UNCLASSIFIED PROCESSING DATE--16OCT70  
TITLE--POLYMERIZATION OF (INORGANIC) COMPOUNDS WITH A SYMMETRIC MONOMERIC  
MOLECULE -U-  
AUTHOR--BAYEV, A.K. *B*  
COUNTRY OF INFO--USSR  
SOURCE--DOKLA. AKAD. NAUK BELORUSS. SSR 1970, 14(2), 134-6  
DATE PUBLISHED-----70  
SUBJECT AREAS--CHEMISTRY  
TOPIC TAGS--INORGANIC CHEMISTRY, VANADIUM COMPOUND, NIOBIUM COMPOUND,  
TANTALUM COMPOUND, MOLYBDENUM COMPOUND, TUNGSTEN COMPOUND, FLUORIDE,  
CHLORIDE, POLYMERIZATION, THERMODYNAMIC PROPERTY, PHASE TRANSITION  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRA--1996/0991 STEP NO--UR/0250/70/014/002/0134/0136  
CIRC ACCESSION NO--AT0118156  
UNCLASSIFIED



2/2 038

UNCLASSIFIED

PROCESSING DATE--16OCT70

CIRC ACCESSION NO--AT0118156

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE POLYMN. OF MX SUBN TYPE COMPS. (I), WHERE M IS V, NB, TA, MO, W; X IS F, CL; N EQUALS 5 OR 6, IS DISCUSSED IN RELATION TO THEIR THERMODYNAMIC PROPERTIES (FORMATION, FUSION, VAPORIZATION, AND SUBLIMATION ENTHALPIES). PHASE TRANSITIONS IN I ARE CHEM. PROCESSES SINCE I, X EQUALS CL ARE DIMERS AND I, X EQUALS F ARE TETRAMERS IN CONDENSED PHASE AND MOST MONOMERIC IN VAPOR PHASE, BUT SOMETIMES POLYMERIC (LIKE I, M EQUALS NB, TA; X EQUALS N; N EQUALS 5 WHICH ARE TETRAMERS BOTH IN VAPOR AND SOLID PHASE). THE ENTHALPIES OF PHASE TRANSITIONS AND DISSOCN. ENERGIES OF THE POLYMERIC I ARE RELATED TO BOND STRENGTHS AND SCREENING OF M BY THE SURROUNDING X ATOMS. ALSO, THE ENERGY OF INTERMOL. INTERACTIONS IN THE CONDENSED STATE AND D.P. OF I ARE RELATED TO THE SCREENING OF THE CENTRAL ATOM. THE D.P. AND THE "STRENGTH" OF THE POLYMERIC MOL. IS HIGHER FROM COMPS. IN WHICH M IS LESS SCREENED. THE DEGREE OF SCREENING IS ESTD. BY COMPARING INTERAT. DISTANCES M-X AND AT. RADII OF M AND X. FACILITY: BELORUSS, TEKHNOL. INST. IM. KIROVA, MINSK, USSR.

UNCLASSIFIED

USSR

UDC 66.099.2:661.635.213

KARMYSHOV, V. F., BURYAK, K. A., ZAYKOVSKIY, A. V., (DECEASED), BAYEV, A. YA.,  
SAVCHENKO, V. A., and PERMINOVA, L. YA.

"Granulation of Ammophos by the Pressing Method"

Moscow, Khimicheskaya Promyshlennost', Vol 48, No 6, Jun 72, pp 434-436

Abstract: A method for the granulation of multipurpose fertilizers by the pressing method was developed at the Scientific Research Institute of Fertilizers and Insectofungicides imeni Ya. V. Samoylov. This method is being applied for the production of granulated ammophos/ammonium phosphate fertilizer/ at the Dzhambulsk Superphosphate Plant. Ammophos pulp with a 50% water content is subjected to spray drying. The dry powder is classified and then compressed to form plates. In the pressing stage 6.56 t/hr of powder (fresh + recycled material) yielded 4.08 t/hr plates and 2.48 t/hr of fine material that had the same granulometric composition as the initial ammophos and was fully recycled. Crushing of the plates resulted in a commercial granulated product with a grain size of 1-3 mm (2.27 t/hr from 4.08 t/hr plates), fine powder with a grain size  $< 1$  mm, that was recycled, and an oversize grain fraction that was reground. One of the principal problems in connection with the process is formation of a large amount of fine material that has to be recycled. Formation of fine material in the amount of 37.8%

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USSR

KARMYSHOV, V. F., et al., Khimicheskaya Promyshlennost', Vol 48, No 6, Jun 72, pp 434-436

in the pressing stage is due principally to the porous structure of the powder being compressed, which contains only 30% of solids, and its high air content. The air contained in the powder interferes with feeding of the powder into the space between the rollers, producing spraying of the powder. It also reduces the adhesion between powder particles. To obtain a lower ratio of fine material that has to be recycled, methods must be developed for reducing the amount of air in the powder.

2/2

USSR

UDC 681.332.64

MAKAREVICH, O. B., BAYEV, B. M., PUDZENKOV, N. A., and P'YAVCHENKO, O. N.,  
Taganrog Radio Engineering Institute

"A Computing Device"

Moscow, Otkrytiya, izobreteniya, promyshlennyye obratzsy, tovarnyye znaki,  
No 3, Jan 71, Author's Certificate No 291216, Division G, filed 7 Apr 69,  
published 6 Jan 71, pp 123-124

Translation: This Author's Certificate introduces a computing device for a digital integrator. The device contains a memory device, integration modules, a multiplier, adders, a remainder register, rectifiers, and shapers. As a distinguishing feature of the patent, the device is simplified and speed is increased by connecting the outputs of the memory device to the inputs of the multipliers and parallel integration modules. Some outputs of the integration modules are connected to inputs of the memory device, while the other outputs of these modules are connected to the inputs of the multipliers. The outputs of the multipliers are connected to the inputs of the non-quantum increment adder, and the output of this adder is connected to the inputs of the increment shaper and a rectifier. The second inputs of the shaper and rectifier are connected to the outputs of the control device. The output of the rectifier is connected to the input of the remainder register, and

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USSR

MAKAREVICH, O. B., et al., Otkrytiya, izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, No 3, Jan 71, Author's Certificate No 291216, Division G, filed 7 Apr 69, published 6 Jan 71, pp 123-124

the other input of the register is connected to the output of the memory device. The output of the remainder register is connected to the second input of the adder which combines the partial sum with the sum of the non-quantum increments.

2/2

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USSR

UDC: 533.652/.661.013

BAYEV, B. S.

"Effect Which Air Suction at the Leading Edge of a Wing Has on the Balance, Stability and Controllability of an Aircraft"

Tr. II Resp. konf. po aerogidromekh., teploobmenu i massoobmenu. Sekts. Aerodinamika bol'sh. skorostey (Works of the Second Republic Conference on Aerohydromechanics, Heat Exchange and Mass Exchange. "High-Velocity Aerodynamics" Section), Kiev, Kiev University, 1971, pp 205-207 (from RZh-Mekhanika, No 5, May 72, Abstract No 5B396)

Translation: The author considers the influence which suctioning of air from the leading edge of a wing has on the longitudinal stability and controllability of an aircraft under the following assumptions: the wing is located on an axis of symmetry; the longitudinal moment of thrust is equal to zero; there is no atmospheric turbulence; only rudder deflections create perturbations; automatic control mechanisms and hydraulic amplifiers are disconnected.

The effect of air suctioning on the nature of disturbed motion is treated in the linear formulation. The coefficient of discharge of the

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USSR

BAYEV, B. S., Tr. II Resp. konf. po aerogidromekh., teploobmenu i masso-  
obmenu. Sekts. Aerodinamika bol'sh. skorostey, Kiev, Kiev University, 1971,  
pp 205-207

suctioned air is assumed to be independent of the angle of attack. It is found by calculations (the paper does not give the figures) that suctioning of air from the leading edge leads to an increase in the period of fast longitudinal oscillations, and intensification of the reaction of the airplane to elevator deflections. Bibliography of five titles. G. S. Aronin.

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USSR

UDC: 534

BAYEV, S. V., BORSHCHOV, V. I.

"Experimental Study of Relaxation Autooscillations of a System with One Degree of Freedom"

Tr. Dnepropetr. In-ta Inzh. Zh.-D. Transp. [Works of Dnepropetrovsk Institute of Railroad Transport Engineering], 1972, No 126, pp 43-49 (Translated from Referativnyy Zhurnal Mekhanika, No 12, 1972, Abstract No 12A153, by E. G. Vol'pert)

Translation: The motion of a Froude pendulum was studied on an experimental installation in which friction was created by a bell pressed against a rotating disc. The bell was coupled to the rod of the pendulum using a frame and lever. The oscillations were measured by a tensometer and recorded by a light-beam oscillograph. High frequency oscillations were detected in the period between release and capture of oscillations. Considerations are presented to explain the appearance of high frequency oscillations by the presence of clearance in the connections. As forces of friction increase, the duration of the high frequency oscillations upon release rises.

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USSR

UDC 612.822.1.015.31:546.18]-06:[612.57+612.223.11

BAYEV, V. I., and SHCHERBACHEV, I. P., Scientific Research Laboratory No 5,  
Military Medical Academy imeni S. M. Kirov, Leningrad

"Metabolism of Some Phosphorus Compounds in the Brain During the First Minutes  
Following Hyperthermia and Hypercapnia"

Moscow, Patologicheskaya Fiziologiya i Eksperimental'naya Terapiya, Vol 14, No 5,  
Sep/Oct 70, pp 20-24

Abstract: Shifts in the brain tissues of rats exposed to elevated temperature and other variations in the environment were studied. It was found that a pronounced disruption of the redox balance and blood respiratory function led to considerable shifts in the phosphorus metabolism of brain tissues. The content of adenosine triphosphate, creatine phosphate, and adenosine monophosphate in brain tissues was monitored by paper chromatography. Inorganic phosphorus content and total acid-soluble phosphorus levels were also monitored. The shift in rectal temperature was also measured. The external shifts to which the rats were exposed included a temperature rise from 35 to 38°C, as well as anesthetic (19-20%) and toxic (26-28%) CO<sub>2</sub> concentrations in the atmosphere, with both normal and reduced oxygen content.

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USSR

UDC 536.46:533.6

BAYEV, V. K., TRET'YAKOV, P. K., YASAKOV, V. A.

"Experimental Study of the Combustion of Gas-Air Mixtures in a Channel and of Diffusion Combustion in a Satellite Flow at High Velocities"

V sb. Goreniye i vzryv (Combustion and Explosion -- Collection of Works), Moscow, "Nauka", 1972, pp 357-360 (from RZh-Mekhanika, No 3, Mar 73, Abstract No 3B952)

Translation: The results of an experimental determination of the lengths of flames of homogeneous mixtures in a plane channel with sudden expansion at velocities at the input to the channel up to  $M = 1.25$  are presented. Also determined were the length of separation and the total length of the flame under combustion of an axisymmetric jet in a satellite coaxial free flow of air and in a channel of constant cross section in the Mach number range 0.4-1.58. The measurements of the flame lengths based on photometric measurement and on the distribution of static pressures are compared. It is shown that a universal representation of the geometric characteristics of the flames is possible. 7 ref. Authors' abstract.

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USSR

UDC: 536.46

BAYEV, V. K., TRET'YAKOV, P. K., YASAKOV, V. A.

"Experimental Study of Processes of Combustion of Gaseous Fuels"

Aerofiz. Issledovaniya [Aerophysical Research -- Collection of Works],  
Novosibirsk, 1972, pp 83-85 (Translated from Referativnyy Zhurnal  
Aviatsionnyye i Raketnyye Dvigateli, No 5, 1973, Abstract No 5.34.91,  
from the Resume).

Translation: An experimental study is performed of the combustion of homogeneous mixtures in a flat channel with a sudden expansion with velocities at the input to the channel of up to  $M = 1.25$  for the case of diffusion combustion of a stream of hydrogen in an open wake and in a channel of constant cross section in the range of weight  $M$  numbers of 0.4 to 1.58.

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USSR

UDC 536.46+532.517.4

BAYEV, V. K., KONSTANTINOVSKIY, V. A., and SIDOROV, I. V.

"The Mixing of Concurrent Streams in a Channel of Constant Cross Section in the Presence of a Recirculation Zone"

Novosibirsk, Fizika Goreniya i Vzryva, No 1, 1972, pp 70-76

Abstract: A description is given, as well as an attempt at generalization, of the results of an experimental investigation of the geometric dimensions of the recirculation zone, and the determination of concentrations along the axis, during the flow of concurrent coaxial streams in a channel of constant cross section, the areas of the stream cross sections being comparable, and with the passive stream situated along the channel axis. The obtained relationships may be used for a priori estimates, for example, of flame stabilization by means of recirculation zones originating during the flow of concurrent streams in a channel of constant cross section. 9 figures. 1 table. 6 references.

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BAYEV, V.K.

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Dec 1972

(C)

1. SHOCK WAVES AND EXPANSIONS IN GASES

Bayev, V. K., B. N. Kondrikov, V. P. Korobeynikov, V. V. Mitrofanov, R. I. Soloukhin, and M. Ye. Topchiyan.  
Research on explosion gas dynamics and reacting systems. FGIV, no. 2, 1971, 311-317.

The Third International Colloquium on explosion gas dynamics and reacting systems took place on September 12-17, 1971 in Marseille, France. Basic topics of theoretical and experimental research reported on were in the field of unsteady dynamic gas flow, accompanied by physicochemical transformations of the medium: gas-chemistry of rocket-fuel combustion and problems of the physics and The colloquium also dealt with the gas dynamics of explosions in engines. The conference was divided into seven sections: a) space phenomena, b) vortex flow, c) explosion gas dynamics, d) detonation, e) shock waves, f) gas-liquid systems, and g) reacting systems. V. P. Korobeynikov gave a gas-dynamic description of the motion and explosion of meteorites on the basis of the supposed explosion pattern of the Tunguskiy meteorite.

A session on twisted flows included a joint report by four U.S. delegates and V. P. Korobeynikov on the influence of heat conduction and viscosity on wave propagation from a powerful explosion. A. A. Vasil'yev, T. P. Gavrilenko, and M. Ye. Topchiyan described planned experimental research on the position of the Chapman-Jouguet plane in a multi-front detonation wave in gas. V. P. Korobeynikov, G. G. Chernyy, et al. presented a theoretical analysis and an example of a numerical

USSR

UDC 629.7.036.3:536.46

BAYEV, V. K., TRET'YAKOV, P. K., and YASAKOV, V. A.

"An Experimental Investigation of the Combustion of Gas-Air Mixtures in a Channel and Diffuse Combustion in a Cocurrent Stream at High Velocities"

Moscow, Goreniye i Vzryv--Sbornik (Combustion and Explosion--Collection of Works), Nauka, 1972, pp 357-360 (from Referativnyy Zhurnal--Aviatsionnyye i Raketnyye Dvigateli, No 2, 1973, Abstract N1 2.34.33 Resume)

Translation: Results are presented of an experimental determination of the flame lengths of homogeneous mixtures in a two-dimensional channel with sudden expansion at velocities of up to 1.25 Mach at the channel entry; the separation length and the total length of the flame during the combustion of an axisymmetric jet in a cocurrent coaxial free stream of air and in a channel of constant cross section within the Mach-number range of 0.4--1.58. Results of measurement of the flame lengths are compared on the basis of photometry and on the basis of distribution of the static pressures. The possibility of criterial generalization of the geometric characteristics of the flame are shown. 8 figures. 7 references.

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USSR

UDC: 621.318.122

BAYEV, Ye. F.

"Aging High-Frequency Magnetic-Dielectric Cores"

Moscow, Radiotekhnika, Vol. 25, No. 11, 1970, pp 94-95

Abstract: The results of experiments performed in aging the magnetic permeability of toroidal and shell cores made of R-100 brand carbonyl iron are given in this brief communication. Curves of the aging process show that the experimental average change in the permeability follows a logarithmic law. From the coefficients of the logarithmic law, a number of problems can be solved including determination of the change in the aging function for any particular time -- the time being measured in months -- or determination of the aging time required. The coefficients can be found graphically from the curves reproduced in the communication, or from formulas developed by the method of least squares. These formulas are also given in the communication.

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USSR

B UDC: 597.0/5-15 4

SHENTYAKOVA, L.F., SHENTYAKOV, V.A., STEPANOV, V.S., ~~SMIRNOVA, N.F.~~, KUZMINA, V.V., BARONKIN, O.F., BAYEVA, G.D., ZAYTSEVA, K.N., Institute of Biology of Inland Waters Academy of Sciences, USSR

"The Effect of Alternating Current on Fish and Aquatic Invertebrates"

Moscow, Voprosy Ikhtiologii (Problems of Ichthyology) Vol 10, No 3, 70, pp 506-518

Abstract: This study on the influence of alternating currents on fish in various stages of life and development, in many different inland waters, covers a period of several years, and includes a great variety of fish. Trawl fishing with alternating current, the effect of current on spawning, embryo, larvae and fry and the subsequent condition of varieties of fish and their reproductive capacity, were studied. Results (summarized in five tables and a graph) show that alternating current in doses causing electronarcosis does not harm any fish in any phase of life and that from spawn to adult, fish develop normally. The catch of fish by alternating-current trawl is 125-263% above the normal. Studies on zooplankton and benthos showed that some organisms are not affected by low current intensities. Current of higher intensity stirred the little animals to a greater activity, and still higher induced electro-narcosis. Plankton and benthos revive rapidly after withdrawal of current. Only in current doses 15-126 times that necessary to induce narcosis does death occur with about 10% of the plankton and benthos surviving.

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USSR

UDC 621.357.7:678.029.665

PETROV, KH., NENOV, D., BAYEVA, V., MIKHAYLOV, M.

"Effect of the Conditions of Pickling Bulgarian Shock Resistant Polystyrene on Its Galvanic Metal Plating"

Polimery 71. Simpoz., Varna, 1971 (Polymers 71. Symposium, Varna, 1971), Place and date of publication not given, 115 (from RZh-Khimiya, No 6 (II), Jun 72, Abstract No 6L324)

Translation: A study was made of the resistance to scaling, the resistance to temperature variations and the corrosion resistance of electrodeposited metal coatings on Bustren U825Yell Bulgarian polystyrene (having antishock properties) pickled before applying the galvanic coating with acid bichromate solutions under various conditions. It was established that the macroroughness of the plastic substrate increases with time during pickling to a defined, later invariant degree for which the resistance to scaling of the metal coating reaches a maximum. A study of the microhardness (by an electron microscope) demonstrated the presence of a correlation of this parameter to the scaling resistance. The conclusion was drawn that the investigated antishock polystyrene can be subjected to metal plating.

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USSR

UDC 669.715'1'3'782'721

GOKHSHEYN, M. B., and BAYEVA, Z. P., All-Union Scientific Research and Planning Institute of the Aluminum, Magnesium and Electrode Industry

"Aluminum-Base Conductor Alloy"

USSR Authors' Certificate No 299560, Cl. C 22c 21/02, filed 12 Feb 68, published 28 May 71 (from RZh-Metallurgiya, No 1, Jan 72, Abstract No 11797P)

Translation: A patent is granted for an Al alloy containing (in %) Fe 0.75-1.5, Cu 0.3-1.0, Si 0.15-0.5, Mg 0.25-0.5, which can be used in the cable industry. Properties of the alloy after annealing at 300°:  $\sigma_B$  15.4 kg/mm<sup>2</sup>,  $\delta$  18.2%,  $\rho$  0.0305 ohm·mm<sup>2</sup>.

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BAYEVSKIY, R. M.

Biotelemetry

V. V. Parin, V. M. Bayevskiy

SPACE BIOTELEMETRY

146-201

SO: SPAS 55354  
06 MAR 61 1972

The second half of the 20th Century can undoubtedly be called the beginning of the space age. In 10-15 years, mankind has made a gigantic step from earth orbiting to temporary lifting of representatives of the animal and plant world of the Earth into space on rockets to manned spacecrafts lasting several days. A new science — space biology — has appeared and become reinforced. Its development is continuing steadily today. Special areas of space biology dealing with different problems of supporting life in outer space, tolerability of space flight factors, training of astronauts, human safety in space, and so on have appeared.

Vegetation for and the performance of manned spaceflights were the first practical goal of space biology with which it dealt successfully. Here, both laboratory research and flight experiments on high altitude meteorological rockets and satellite orbit with different biological subjects on board had great significance.

One of the important roles in providing for space flights of man and animals has been played by the problems of transmitting biomedical data from on board the spacecraft to Earth and organization of reliable medical monitoring of the astronaut at a significant distance from ground-based medical personnel. Manned spaceflight became a practical possibility only with certainty of its favorable completion although the technical possibility of manned flight obviously existed appreciably earlier.

One of the specific procedures of space biology is biotelemetry — a new branch of medical radio electronics which has been developing rapidly, intensively in connection with progress in astronautics. Biotelemetry has a relation to all aspects of space biology: studying the effect of the factors of outer space on animals, organisms, insuring flight safety, monitoring the conditions which astronauts must endure, and studying the forms of extraterrestrial life.

Space biotelemetry deals with the problems of obtaining, converting, storing and transmitting biological data under space flight conditions. This is one of the divisions of space biology which combines the achievements of

BAYEVSKIY, R. M.

Communication

STRUCTURE AND CLASSIFICATION OF BIOTELEMETRIC SYSTEMS  
V. V. Parin, R. M. Bayevskiy, Ye. S. Gal'ev

Structure of Biotelemetric Systems

pp 35-44

The structure of a biotelemetric system can be presented in accordance with the known block diagrams of the communications system, proposed in Section 3) the communication channel; 4) the power source (battery); 5) the transmitter (transmission); 6) the receiver; 7) the recording of the information.

Each of these links is characterized by a number of parameters specific to the given type of biotelemetric system. For example, let us compare two systems: one for recording the electrocardiogram of a person in flight and the other for recording the biopotentials of the brain of a cat under the conditions of free movement.

Different sources of information give rise to significant differences in the design and arrangement of the electrodes and the transmitter. The transmitter attached to a cat must be not only miniature and light but also operate reliably in the case of quick movements (jumps) by the animal and insure high-quality signal transmission when the subject assumes various positions relative to the receiving antenna.

The transmission of data from space imposes special requirements on the receiving and transmitting equipment, on the communication channel, on the power supplies and on the electrodes on the astronaut's body. Therefore, it is very important to create a proper scientific classification of biotelemetric systems which will permit standardization of the requirements on devices and elements of them.

Material presented by V. A. Fedorov will be used in this chapter.

BAYEVSKIY, R.M.

MEDICAL  
SCI.

BIOELECTRIC SYSTEM ELEMENTS

R.M. Bayevskiy, Ye. S. Gellert, R. V. Neshin

pp. 55-77

In recent years, the most varied elements, known have been recognized by means of biopotential devices -- from the simple nerve sensitive to the electroencephalograms of rats. A common characteristic of all the studies of this type is that the sensitive elements of the recording system are of a defined distance from the researcher and can not be regarded during the measurement process. On the other hand, attached as a special device, the study of organisms under the conditions of their natural behavior, the comfortable gathering of the information is, the more physiological, the more results obtained. Finally, it is important to note that depending on the purpose of the study and type of information gathered, the structure and complexity of the entire biopotential system as a whole, and its individual elements, in particular, change.

The device providing for gathering of biological information and its conversion to a form suitable for further amplification and transmission over a radio channel can be called bioinformation converters. As a rule, the output systems of bioinformation converters are an electric voltage or current. The most important requirements on bioinformation converters consist in the possibility of calculating parameters and making measurements. It is possible to calculate bioinformation converters as two matching devices between the subject and the measuring system which is simultaneously a filter which passes only given signals.

For example, the electrodes on the skin of the examinee can, depending on the type of securing circuit, measure recording of the electrocardiogram, an impedance pneumogram, and a rheocardiogram.

Consequently, the nature of the information obtained by means of biopotential systems is determined not only by the sensitive element of their input but also by the characteristics of the structure of the system as a whole.

All the measured medical-physiological parameters can be divided into two large groups: a) measured directly, b) measured indirectly.

USSR

UDC:629.78.002.3

SHCHUKIN, V.K., DRESVYANNIKOV, F.N., BAYGALIYEV, B.E. and  
GOLIN, N.P.

"Experimental Investigation of Degradation Heat of Polymethylmethacrylate  
as Function of Temperature and Pressure"

Kazan', Tr. Kazan. Aviats. In-ta (Transactions of Kazan' Aviation  
Institute), 1972, vyp 151, pp 30-35 (from Referativnyy Zhurnal-Raketostroyeniye,  
1973, Abstract No 4.41.210)

Translation: Degradation heat of N-polymethylmethacrylate in the temperature  
range of 777-1100°K and pressures 0.1-7 ton/m<sup>2</sup> was investigated experi-  
mentally. It was established that the degradation heat decreases with the  
increase of pressure. The experimental data were reduced by the least square  
method and approximated by the equation  $H=f(P, T)$ . 3 illustrations.  
3 references. Author's resume.

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Immunology

USSR

UDC 616.5-002.44

BAYGEL'DIYEVA, A. B., Chair of Infectious Diseases, Kirgiz Medical Institute

"Comparative Clinical Characteristics of the Cutaneous Form of Anthrax in Adults and Children Vaccinated with STI Vaccine and Unvaccinated"

Frunze, Sovetskoye Zdravookhraneniye Kirgizii, No 6, Nov/Dec 70, pp 40-43

Abstract: A total of 217 persons with anthrax in various degrees of severity were studied. The period of emergence and disappearance of necrosis in comparable groups of patients was determined. As a rule, necrosis originated during the first 3 days; it lasted for more than 4-6 days in only a few cases of unvaccinated patients. A statistical relationship between the period of necrosis and the seriousness of the illness was established. In unvaccinated patients with serious illness, the necrosis appeared late in the course of the disease; it appeared somewhat earlier in cases of medium severity. Body temperature, intoxication symptoms, coating of the tongue, central nervous system disruptions, headaches, and other symptoms were compared for the different groups of patients. No particular digestive symptoms were noted in vaccinated patients or children. No pronounced cardiovascular shifts were noted during the climax of the disease in either group of patients.

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USSR"

BAYGEL'DIYEVA, A. B., Sovetskoye Zdravookhraneniye Kirgizii, No 6, Nov/Dec  
70, pp 40-43

Meningitis symptoms were observed in a few unvaccinated patients. In the  
vaccinated patients, no cases of insomnia, delirium, or interrupted con-  
sciousness were observed.

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USSR

UDC 632.95

RAZUMOV, A. I., GUREVICH, P. A., and BAYGIL'DINA, S. YU., (Kazan Chemical and Technological Institute

"A Method of Obtaining Phosphorylated Acylals"

USSR Authors Certificate No 311922, filed 31 Mar 70, published 10 Nov 71  
(from Referativnyy Zhurnal -- Khimiya, No 10 (II), 1972, Abstract No 10N521P  
by L. V. Razvodovskaya)

Translation: Compounds of the general formula  $RR'P(O)CH_2CH_2OCH=CC(O)R''$  (I)  
( $R, R' = \text{alkyl, aryl, alkoxyl, } R'' = \text{alkyl, haloalkyl}$ ) are obtained by the reaction  
of  $RR'P(O)CH_2CH_2OCH=CH_2$  (II) with carbon acids. To 0.01 mole II ( $R=R'=EtO$ )  
0.1 mole  $CF_3COOH$  is added dropwise, the temperature rises from  $20^\circ$  to  $34^\circ$ ; the  
mixture is stirred and the temperature is lowered to  $20^\circ$ ; it is then distilled  
to give I ( $R=R'=EtO, R''=CF_3$ ); yield: 52.8%, boiling point  $110^\circ/0.7$ ,  $n_D^{20} 1.4485$ ,  
 $d_4^{20} 1.30$ . I ( $R=MeO, R'=Ph, R''=CF_3$ ), yield 41.2%, boiling point  $188^\circ/0.5$ ,  $n_D^{20}$   
 $1.4967$ ,  $d_4^{20} 1.32$ , is obtained by heating the resulting mixture for 3 hours at  
 $60^\circ$ . Compounds I may have physiological activity.  
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USSR

UDC: 632.95

ARBUZOV, A. Ye., VALITOVA, F. G., and BAYGIL'DINA, S. Yu., Institute of Organic and Physical Chemistry im. A. Ye. Arbuzov)

"A Method for Preparing Diphenylthiophosphonhydrazines"

USSR Author's Certificate No 256761, filed 3 May 67, published 13 Apr 70 (from RZh-Khimiya, No 22, 25 Nov 70, Abstract No 22 N651 P by G. V. Kuznetsova)

Translation: These substances with the formula  $R_2P(S)NHNPh_2$  (I) (R=alkosyl, aryloxy group or aryl) are obtained from the reaction of  $R_2P(S)X$  (X=halide) with  $Ph_2NNH_2$  (II) in a medium of polar solvents. A solution of 9.2 g of  $(EtO)_2P(S)Cl$  in 25 ml of MeCN is added to a solution of 18 g of II in 15 ml of MeCN after which the mixture is left to stand for several days. The precipitated hydrochloride of II is filtered out and the solution is evaporated to an oil which is treated with ether. The residue of II hydrochloride is separated and after the ether evaporates an oil is obtained which crystallizes at  $-10^\circ$ . The yield of I (R=OEt),  $C_{15}H_{12}N_2O_2PS$ , is 61%, melting point  $69-70^\circ$ . I (R=OPh),  $C_{24}H_{21}O_2PS$ , are prepared in a similar fashion, yield 66%, oil; and

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USSR

ARBUZOV, A. Ye., et al, USSR Author's Certificate No 256761, filed 3 May 67, published 13 Apr 70 (from RZh-Khimiya, No 22, 25 Nov 70, Abstract No 22 N651 P by G. V. Kuznetsova)

I (R2Ph),  $C_{24}H_{21}N_2PS$ , yield 24%, melting point  $153-4^{\circ}$  (absolute alcohol), along with 65%  $\angle Ph_2(S) \int_2 O$ ,  $C_{24}H_{20}OP_2S_2$ , melting point  $200-2^{\circ}$  (PhMe). I can be used as physiologically active substances.

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Pesticides

USSR

UDC 632.934.1:546.57-386

KUZNETSOV, A. YA., RAYGOZHIN, A., BEYM, I. G., MIRONOV, V. YE.,  
Leningrad State Pedagogical Institute imeni A. I. GERTSEN

"Study on the Light Sensitivity and Fungicidal Properties of  
Silver Complexes"

Leningrad, Zhurnal prikladnoy Khimii, Vol 64, No 10, Oct 71,  
pp 2311-2315

Abstract: Dense shielding of a silver ion by various ligands without reducing properties makes it possible to obtain photo-stable complexes. This study concerns the quantitative aspects of the light sensitivity, thermal stability, and the fungicidal properties of a number of silver compounds with high light sensitivity. The highest light resistance (1 year+) was shown by tris-1,10-phenanthroline perchlorate. The high light resistance is attributed to the dense shielding of the silver ion by three large ligand molecules which hinder the charge transfer to  $Ag^+$  from outer-sphere ions as well as to the low electron donor capacity of the outer-sphere perchlorate ion. It is noteworthy that

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KUZNETSOV, A. YA., et al, Zhurnal prikladnoy Khimii, Vol 64,  
No 10, Oct 71, pp 2311-2316

high light resistance is typical of thermally stable compounds. Bis-2,2'-biopyridylsilver nitrate was the only compound to pass the standard tests for biological activity (15 days). Silver complexes with 1,10-phenanthroline and ethylenethiourea also show promise with regard to both light resistance and biological activity. These compounds must be used in the form of nitrates or perchlorates with a co-ordination-saturated inner sphere. Test data on the light resistance and biological activity of complex silver compounds, their formulas, ligands, complex concentration in solution and test durations are given.

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MATHEMATICS

Differential & Integral Equations

USSR

UDC 517.946

BAYGUZIN, F. SH.

"Application of Cauchy Integrals to the Solution of Boundary Value Problems for a Mixed Type, Fourth-Order Equation, I"

Kazan', Izvestiya Vysshikh Uchebnykh Zavedeniy, Matematika, No 2, Feb 71, pp 13-21

Abstract: Two of the simplest boundary value problems for a mixed fourth-order equation are investigated in this article. The discussion includes reduction of the solution of the boundary value problem to the solution of a system of singular integral equations, solution of the system of singular integral equations, and variations of conditions given in the characteristics.

The boundary value problem is formulated as a definition of the function  $U(x, y)$  with the following properties:

1.  $U(x, y)$  is the solution of the equation 
$$\frac{\partial^4 U}{\partial x^4} + 2 \operatorname{sgn} y \frac{\partial^4 U}{\partial x^2 \partial y^2} + \frac{\partial^4 U}{\partial y^4} = 0$$
 (1) in the domain  $D$  for  $y \neq 0$  at the end points.

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BAYGUZIN, F. SH., Izvestiya Vysshikh Uchebnykh Zavedeniy, Matematika, No 2, February 1971, pp 13-21

2.  $U(x, y)$  and its first-order partial derivatives  $U_x(x, y)$  and  $U_y(x, y)$  are continuous in the closed domain  $\bar{D}$ .

3. The partial derivatives  $U_{x^2}(x, y)$ ,  $U_{xy}(x, y)$ ,  $U_{y^2}(x, y)$  are continuous in the domain.

4. The partial derivatives  $U_{x^3}(x, y)$ ,  $U_{x^2y}(x, y)$ ,  $U_{xy^2}(x, y)$ ,  $U_{y^3}(x, y)$  are continuous in the domain  $D$ .

5. The function  $U(x, y)$  and its normal first-order derivatives satisfy the following conditions:

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$$\begin{aligned} U(x, y)|_{\Gamma_1} &= \phi_1(x), & \frac{\partial U(x, y)}{\partial n}|_{\Gamma_1} &= \phi_2(x); \\ \frac{\partial U(x, y)}{\partial n}|_{\gamma_1} &= \psi_1(x), & \frac{\partial U(x, y)}{\partial n}|_{\gamma_2} &= \psi_2(x); \\ U(x, y)|_{\Gamma_1} &= \phi_3(x), & \frac{\partial U(x, y)}{\partial n}|_{\Gamma_2} &= \phi_4(x), \end{aligned}$$

where  $n$  is the internal normal.

6.  $U(x, y)$  satisfies the condition  $\lim_{r \rightarrow \infty, y > 0} U(x, y) = 0$ , where  $r = \sqrt{x^2 + y^2}$ ,  $\Gamma_1$  is a half line  $y = 0$ ,  $-\infty < x < -1$ ,  $\Gamma_2$  is a half line  $y = 0$ ,  $1 < x < \infty$ ;  $\gamma_1$  and  $\gamma_2$  are characteristics of equation (1); that is,  $y = -x - 1$ ,  $-1 \leq x \leq 0$  and  $y = x - 1$ ,  $0 \leq x \leq 1$ , respectively;  $\Delta$  is the upper half plane;  $D_1$  is the domain bounded by the characteristics  $\gamma_1, \gamma_2$  and the segment of the real axis  $y = 0$ ,  $-1 \leq x \leq 1$ . The ends of the indicated segment



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BAYGUSIN, F. SH., Izvestiya Vysshikh Uchebnykh Zavedeniy, Matematika, No 2, February 1971, pp 13-21

are denoted by  $A(-1, 0)$  and  $B(1, 0)$ , and in the domains  $\Delta$  and  $D_1$  equation (1) is an equation of the elliptic or hyperbolic type respectively.

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1/2 019 UNCLASSIFIED PROCESSING DATE--30OCT70  
TITLE--AN ATTACHMENT FOR BORING DEEP HOLES IN VERY HARD MATERIALS -U-  
AUTHOR--(02)-BAYKALOV, A.K., MUKOVZ, YU.A. **B**  
COUNTRY OF INFO--USSR  
SOURCE--KIEV, TEKHNOLOGIYA I ORGANIZATSIYA PROIZVODSTVA, NO 1, 1970, PP  
33-34  
DATE PUBLISHED--70  
SUBJECT AREAS--MATERIALS, MECH., IND., CIVIL AND MARINE ENGR  
TOPIC TAGS--HARD ALLOY, CAST IRON, METAL DRILLING, LATHE, ALLOY  
DESIGNATION, METALLURGIC RESEARCH FACILITY, MACHINE TOOL, BORING  
MACHINE/(U)CHKH12NR2 ALLOYED HARD CAST IRON  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REL/FRAME--1999/1330 STEP NO--UR/0418/70/000/001/0033/0034  
CIRC ACCESSION NO--AP0123288  
UNCLASSIFIED

UNCLASSIFIED

PROCESSING DATE--30CCT70

2/2 019

CIRC ACCESSION NO--AP0123288

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE AUTHORS PRESENT THE DESIGN OF A BORING ATTACHMENT FOR THE MODEL 163 LATHE WHICH MAKES IT POSSIBLE TO MACHINE HOLES 170-210MM IN DIAMETER AND 1100MM LONG IN PARTS MADE FROM VERY HARD CAST IRON DURING ROUGH AND FINISH BORING WITHIN THE THIRD CLASS OF ACCURACY USING A BORING HEAD. THE ATTACHMENT WAS DEVELOPED AT THE INSTITUTE OF SUPER HARD MATERIALS (INSTITUT SVERKHIVERDYKH MATERIALOV). TABLES ARE GIVEN FOR ADJUSTING THE ATTACHMENT FOR VARIOUS RATES OF FEED. THE GEOMETRY FOR BORING CUTTERS IS GIVEN ALONG WITH CUTTING REGIMES FOR MACHINING THE CHK12N7R2 GRADE OF VERY HARD ALLOYED CAST IRON WITH AN HRS OF 60-62. .

UNCLASSIFIED

US:R

UDC 669.293.5:669.295.5

BAYKOV, A. I., KUZNETSOVA, M. I., SHADSKIY, D. V., MEL'NIKOVA, L. V.,  
MIKHAYLOV, S. M., and BORBCHEVA, L. S.

"Technological and Superconducting Properties of 60T Alloy"

Problemy Sverkhprovodyashchikh Materialov [Problems of Superconducting  
Materials -- Collection of Works], Moscow, Nauka Press, 1970, pp 193-202

Translation: The article studies the technological and superconducting properties of 60T alloy. The dependence of mechanical properties on the degree of cold deformation and diameter of the wire is demonstrated.

The mechanism of deformation of the alloy at high temperatures is studied. It is established that the high plastic properties of the alloy allow cold drawing of wire at 100 m/min. The influence of intermediate annealing and hardening and of final annealing on critical current density as a function of external magnetic field is studied.

7 figures, 4 tables, 4 biblio. refs.

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USSR

UDC: 537.312.62

BAYKOV, A. I., KLEYN, G. A., GORBACHEVA, L. S., ALIMOVA, R. N., MIKHAYLOV, S. M., LITVINOVA, I. I., BEREZIN, R. G.

"Investigation of Some Properties of the Ternary Alloy SS-2 in the Process of Deformation and Vacuum Annealing"

Moscow, Sverkhprovodyashchiye splavy i soedin.--sbornik (Superconductive Alloys and Compounds--collection of works), "Nauka", 1972, pp 157-160 (from RZh-Radiotekhnika, No 12, Dec 72, abstract No 12D563 [résumé])

Translation: A series of experiments is done to determine the influence of intermediate annealing on the technological, mechanical, electrical and structural properties of wire made from SS-2 alloy, which is a member of the niobium-titanium-zirconium ternary system. The resultant data show that intermediate annealing embrittles SS-2 wire to a greater extent as the diameter of the wire decreases and the annealing temperature increases. X-ray structural analysis showed that there is no change in phase composition of the alloy under the given annealing conditions; all specimens have the structure of a  $\beta$ -solid solution with lattice parameter  $a=0.325$  nm. An examination of powder patterns obtained from annealed wire of all diam-

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BAYKOV, A. I. et al., Sverkhprovodyashchiye splavy i soyedin.--sbornik, "Nauka", 1972, pp 157-160

eters showed that the temperature for beginning of recrystallization of all diameters of wire is the same -- 700°C. Further annealing increases grain size, an especially intensive increase in grain size being observed at annealing temperatures of 1000 and 1100°C. One illustration, bibliography of six titles.

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Materials

USSR

UDC: 537.312.62

BAYKOV, A. I., KUZNETSOVA, M. I., MEL'NIKOVA, L. V.

"Mechanical and Superconducting Properties of Alloys in the Niobium-Titanium System and Their Field of Application"

Nauchn. tr. N.-i. i proyekt. in-t redkomet. prom-sti (Scientific Works of the Scientific Research and Design Institute of the Rare Metals Industry), 1971, 32, pp 98-110 (from RZh-Radiotekhnika, No 5, May 71, Abstract No 5D532)

Translation: Alloys in the niobium-titanium system with a titanium concentration of more than 40 percent (atomic) have a higher critical magnetic field ( $H_{k2}$ ) than in the case of niobium-zirconium and niobium-titanium-zirconium alloys. The highest magnetic field is attained on an alloy with 60 percent (atomic) titanium. 60T alloy wire is used for making superconducting solenoids. Ten illustrations, three tables, Bibliography of nine titles. Resumé.

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USSR

UDC: 537.312.62

BAYKOV, A. I., KUZNETSOVA, M. I., SHADSKIY, D. V., MEL'NIKOVA, L. V., MIKHAYLOV, S. M., GORBACHEVA, L. S.

"Technological and Superconducting Properties of 60T Alloy"

V sb. Probl. sverkhprovodyashch. materialov (Problems of Superconducting Materials--collection of works), Moscow, "Nauka", 1970, pp 193-202 (from RZh-Radiotekhnika, No 5, May 71, Abstract No 5D555)

Translation: This article deals with the technological superconducting properties of 60T alloy. It is shown how the mechanical properties depend on the degree of cold deformation and the diameter of the wire. The mechanism of deformation of the alloy at high temperatures is considered. It is found that the high plastic properties of the alloy permit cold drawing of wire at a rate of 100 m/min. An investigation is made of the effect which intermediate annealing and quenching as well as final annealing have on the density of the critical current as a function of the external magnetic field. Seven illustrations, four tables, bibliography of four titles. Resumé.

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USSR

UDC 669.293.5.295.018.5.537.312.62

BAYKOV, A. I., KUZNETSOVA, M. I., MEL'NIKOVA, L. V.

"Mechanical and Superconducting Properties of Alloys in the Niobium-Titanium System and Area of Their Application"

Nauchn. Tr. N-i. i Proyechn. In-t Redkomet. Prom-sti [Scientific Works of Scientific Research and Planning Institute for the Rare Metals Industry], 1971, Vol. 32, pp. 98-110. (Translated from Referativnyy Zhurnal Metallurgiya, No. 5, 1971, Abstract No. 5 I782 by the authors).

Translation: Alloys in the system Nb-Ti with contents of Ti > 40 at.% have higher critical magnetic field than the alloys Nb-Zr and Nb-Ti-Zr. The highest magnetic field is produced in the alloy with 60 at.% Ti. A wire of this 60 T alloy has been used in the manufacture of superconducting solenoids. 10 figs; 3 tables; 9 biblio refs.

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USSR

UDC 669.295.5.018.5.537.312.62

BAYKOV, A. I., KUZNETSOVA, M. I., SHADSKIY, D. V., MEL'NIKOVA, L. V., MIKHAYLOV, S. M., GORBACHEVA, L. S.

"Technological and Superconducting Properties of 60 T Alloy"

Probl. Sverkhprovodyashch. Materialov [Problems of Superconducting Materials -- Collection of Works], Moscow, Nauka Press, 1970, pp. 193-202. (Translated from Referativnyy Zhurnal Metallurgiya, No. 5, 1971, Abstract No. 5 I791 by the authors).

Translation: The technological and superconducting properties of 60 T alloy are studied. The dependence of mechanical properties on the degree of cold deformation and diameter of wire is shown. The mechanism of deformation of the alloy at high temperatures is studied. It is established that the high plastic properties of the alloy allow cold drawing of wire to be performed at a rate of 100 m/min. The influence of intermediate annealing and hardening, as well as final annealing, on the critical current density is studied as a function of the external magnetic field. 7 figs; 4 tables; 4 biblio refs.

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USSR

UDC: 537.529

BAYKOV, A. P., ISKOL'DSKIY, A. M., and NESTERIKHIN, Yu. Ye.,  
Institute of Automation and Electrometry, Novosibirsk

"Electrical Explosion of Wires Under High Energy Velocities"

Leningrad, Zhurnal tekhnicheskoy fiziki, No 1, 1973, pp 136-140

Abstract: If an energy level close to the energy of sublimation is put into a conductor for a time equal to the time constant for the growth of low-mode magnetohydrodynamic instabilities, the instabilities should not develop. The experiment described in this article is designed to test this theory. It consists in connecting exploding wires to a three-channel generator of rectangular pulses, one channel of which supplies energy to the wire, the other two being used to form gating pulses supplied to an electronic-optical converter to trigger a camera for photographing the explosion. A diagram of the generator is given. Since the pulse supplied by the generator has a steep leading edge, the time rate of change of the energy supplied to the wire is enormous, of the order of  $10^{10}$  joules/g·sec. The experiments show that rapid explosions in wires of  $10^{-3}$  cm diameter occur without the development of MHD instabilities. The authors express gratitude to A. Z. Potashinskiy for

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UDC: 537.529

BAYKOV, A. P., et al, Zhurnal tekhnicheskoy fiziki, No 1, 1973,  
pp 136-140

his comments and to V. G. Stashevskiy for his assistance with the  
experiments.

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